NOTICE INVITING QUOTATION

Sub: Purchase of Chemisorption Analyzer with Temperature Programmed Chemisorption Analyzer from Project RP02501

Following previous NIQ (NID No. 2380) sealed quotations in separate envelop of technical and commercial bid kept in a one sealed outer envelope are invited for purchase of a “Chemisorption Analyzer with Temperature Programmed Chemisorption option” as per specifications given below for an extended period of time. Your sealed quotation should reach latest by June 15, 2013 to HOD, Chemical Eng. Dept. (II/278), Indian Institute of Technology Delhi, Hauz Khas, New Delhi-110016. Your quotation should be superscribed ‘Quotation for Chemisorption Analyzer’ dated.

Specifications for Chemisorption Analyzer for Pulse Chemisorption and Physisorption Capability:

Analytical Techniques: BET surface area, total pore volume, Langmuir surface area, active metal area, crystallite size, acid / base site quantification.

Other Features:
- Both chemisorption and physisorption capability
- Temperature regulated thermal conductivity detector
- Syringe injection capability
- Two sample ports
- Built in sample cooling fan
- Four carrier gases, one preparation gas
- Non corrosive/reactive tubing for active gas i.e. H₂, NH₃, CO, CO₂, O₂, SO₂ etc.
- High temperature quartz sample tube

Capabilities: Analysis facility with external mass spectrometer, TPx experiment design and instrument management through addition of oven controller and PC based software.

Electrical voltage: 220 VAC, Frequency: 60 Hz, Power: 0.75A (220/240 VAC), Humidity: 20 to 80% relative, Sample tube: Quartz (chemisorptions); Borosilicate (Physisorption), Gas supplies: ammonia, nitrogen, carbon monoxide, hydrogen, nitrous oxide, and oxygen. Mixture with helium, of nitrogen, argon, krypton, ethane, n-butane, and other non corrosive gases. Coolant: liquid nitrogen or argon, solvent slush baths, ice water. Accuracy/Reproducibility: Active Volume: Better than ± 1.5-2% with ± 0.5% reproducibility, surface area: Better than ± 2 - 3 % with ± 0.5% reproducibility, Active gas volume: 0.0001 to ≥10 cm³, active specific volume: 0.0001 to ≥ 20 cm³/g, Surface area: 0.2-199 m², Specific surface area: minimum 0.02 m²/g,
maximum limited by weighing of sufficiently small sample. Pore volume: 0.0001-0.15 cm$^3$, Sample size: Upto 1 cm$^2$ diameter × 3 cm$^2$ length, Sample ports: one sample and one analysis port, Active volume: injection steps 1 to 2 hours per sample. Sample preparation temperature: 35 to 400 °C.

**Specifications for Temperature Programmed Chemisorption for desorption, reduction and oxidation analysis:**

- Furnace temperature range up to 1100 °C
- Furnace controller programmable with temperature ramp rate from 0.5 °C to 50 °C per minute.
- PC based instrument management
- Removable furnace i.e. quickly switches between standard pulse chemisorptions and TPD/TPR applications.
- High temperature quartz sample tube
- Tool for analyzing catalyst techniques
- Operating supply kit

**Terms & Conditions:**
1. The quotations must have validity of at least three months.
2. Quotation must include insurance and air-freight charges, delivery period of the items addresses to the Indian Institute of Technology, Delhi, India (FOB and CIF, New Delhi should be mentioned).
3. The products will be used for educational purposes. Any applicable academic institution discounts should be offered and stated.
4. Detailed Brochures should accompany the offer.
5. If the bidder is an authorized dealer then the authorized Indian dealership certificate from the principles should be enclosed.
6. Warranty details must be given.
7. Payment will be through irrevocable Letter of Credit.
8. In case the items are proprietary products of the company, a proprietary item certificate stating the same must be provided.
9. Training should be provided free of cost.
10. Institute reserves the right to accept or reject any or all the quotations without assigning reasons thereof.
11. In case PC and UPS are required, the cost of the same must be provided as optional item.

Chairman PFC